



# SLOVENSKI STANDARD

## SIST EN 60966-1:2001

01-februar-2001

Nadomešča:

SIST EN 60966-1:1996

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### Radio frequency and coaxial assemblies - Part 1: Generic specification - General requirements and test methods (IEC 60966-1:1999)

Radio frequency and coaxial cable assemblies -- Part 1: Generic specification - General requirements and test methods

Konfektionierte Koaxial- und Hochfrequenzkabel -- Teil 1: Fachgrundspezifikation - Allgemeine Anforderungen und Prüfverfahren

Ensembles de cordons coaxiaux et de cordons pour fréquences radioélectriques -- Partie 1: Spécification générique - Généralités et méthodes d'essai

Ta slovenski standard je istoveten z: EN 60966-1:1999

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**en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
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**EN 60966-1**

June 1999

ICS 33.120.10

Supersedes EN 60966-1:1993

English version

**Radio frequency and coaxial cable assemblies**  
**Part 1: Generic specification - General requirements and test methods**  
**(IEC 60966-1:1999)**

Ensembles de cordons coaxiaux et  
de cordons pour fréquences  
radioélectriques  
Partie 1: Spécification générique  
Généralités et méthodes d'essai  
(CEI 60966-1:1999)

Konfektionierte Koaxial- und  
Hochfrequenzkabel  
Teil 1: Fachgrundspezifikation  
Allgemeine Anforderungen und  
Prüfverfahren  
(IEC 60966-1:1999)

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This European Standard was approved by CENELEC on 1999-05-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

### Foreword

The text of document 46A/343/FDIS, future edition 2 of IEC 60966-1, prepared by SC 46A, Coaxial cables, of IEC TC 46, Cables, wires, waveguides, R.F. connectors, and accessories for communication and signalling, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60966-1 on 1999-05-01.

This European Standard supersedes EN 60966-1:1993.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2000-02-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2002-05-01

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annexes A, E and ZA are normative and annexes B, C and D are informative.

Annex ZA has been added by CENELEC.

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Endorsement notice

The text of the International Standard IEC 60966-1:1999 was approved by CENELEC as a European Standard without any modification.

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## Annex ZA (normative)

Normative references to international publications  
with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE: When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-2-3	1969	Basic environmental testing procedures Part 2: Tests - Test Ca: Damp heat, steady state	HD 323.2.3 S2 <sup>1)</sup>	1987
IEC 60068-2-6 + corr. March	1995 1995	Part 2: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	1995
IEC 60068-2-11	1981	Part 2: Tests - Test Ka: Salt mist	EN 60068-2-11	1999
IEC 60068-2-14	1984	Part 2: Tests - Test N: Change of temperature	HD 323.2.14 S2 <sup>2)</sup>	1987
IEC 60068-2-27	1987	Part 2: Tests - Test Ea and guidance: Shock	EN 60068-2-27	1993
IEC 60068-2-29 + corr.	1987	Part 2: Tests - Test Eb and guidance: Bump	EN 60068-2-29	1993
IEC 60068-2-42	1982	Part 2: Tests - Test Kc: Sulphur dioxide test for contacts and connections	-	-
IEC 60068-2-68	1994	Part 2: Tests - Test L: Dust and sand	EN 60068-2-68	1996
IEC 60096-1	1986	Radio-frequency cables Part 1: General requirements and measuring methods	-	-
IEC 60332-1	1993 <sup>3)</sup>	Tests on electric cables under fire conditions Part 1: Test on a single vertical insulated wire or cable	-	-

1) HD 323.2.3 S2 includes A1:1984 to IEC 60068-2-3.

2) HD 323.2.14 S2 includes A1:1986 to IEC 60068-2-14.

3) HD 405.1 S1 is superseded by EN 50265-1:1998 and EN 50265-2-1:1998, which are related to IEC 60332-1:1993.

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<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60339	series	General purpose rigid coaxial transmission lines and their associated flange connectors	HD 350	series
IEC 60512-5	1992	Electromechanical components for electronic equipment, basic testing procedures and measuring methods Part 5: Impact tests (free components), static load tests (fixed components), endurance tests and overload tests	-	-
IEC 61169-1	1992	Radio-frequency connectors Part 1: Generic specification - General requirements and measuring methods	EN 61169-1	1994
IEC 61196-1	1995	Radio-frequency cables Part 1: Generic specification - General, definitions, requirements and test methods	-	-
IEC 61726	1995	Cable assemblies, cables, connectors and passive microwave components - Screening attenuation measurement by the reverberation chamber method	-	-
IEC QC 001002	1986	Rules of procedure of the IEC Quality Assessment System for Electronic Components (IECQ) <a href="https://standards.iteh.ai/catalog/standards/sist/351544cb-1c8b-42dc-aa6f-9b30c71e110c/iec-60966-1-2001">https://standards.iteh.ai/catalog/standards/sist/351544cb-1c8b-42dc-aa6f-9b30c71e110c/iec-60966-1-2001</a>	-	-
ISO 9000	series	Quality management and quality assurance standards	EN ISO 9000	series
ISO 9001	1994	Quality systems - Model for quality assurance in design/ development, production, installation and servicing	EN ISO 9001	1994
ISO 9002	1994	Quality systems - Model for quality assurance in production, installation and servicing	EN ISO 9002	1994

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**60966-1**

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**Ensembles de cordons coaxiaux et de cordons  
pour fréquences radioélectriques –**

**Partie 1:  
Spécification générique –  
Généralités et méthodes d'essai**

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**Part 1:  
Generic specification –  
General requirements and test methods**

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For price, see current catalogue*

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## RADIO FREQUENCY AND COAXIAL CABLE ASSEMBLIES –

## Part 1: Generic specification – General requirements and test methods

## FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60966-1 has been prepared by subcommittee 46A: Coaxial cables, of IEC technical committee 46: Cables, wires, waveguides, r.f. connectors and accessories for communication and signalling.

This second edition cancels and replaces the first edition published in 1988, amendment 1 (1990) and amendment 2 (1995) and constitutes a technical revision.

The text of this standard is based on the following documents:

FDIS	Report on voting
46A/343/FDIS	46A/346/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

Annexes A and E form an integral part of this standard.

Annexes B, C and D are for information only.

## RADIO FREQUENCY AND COAXIAL CABLE ASSEMBLIES –

### Part 1: Generic specification – General requirements and test methods

#### 1 Scope

This International Standard specifies requirements for radio frequency coaxial cable assemblies operating in the transverse electromagnetic mode (TEM) and establishes general requirements for testing the electrical, mechanical and environmental properties of radio frequency coaxial cable assemblies composed of cables and connectors. Additional requirements relating to specific families of cable assemblies are given in the relevant sectional specifications.

NOTE 1 – The design of the cables and connectors used should preferably conform to the applicable parts of IEC 61196 and IEC 61169 respectively.

NOTE 2 – This specification does not include tests which are normally performed on the cables and connectors separately. These tests are described in IEC 61196-1 and IEC 61169-1 respectively.

NOTE 3 – Wherever possible, cables and connectors used in cable assemblies, even if they are not described in the IEC 61196 or IEC 61169 series are tested separately according to the tests given in the relevant generic specification.

NOTE 4 – Where additional protection is applied to a cable assembly, the mechanical and environmental tests described in this standard are applicable.

#### 2 Normative references (standards.iteh.ai)

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 60966. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 60966 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60068-2-3:1969, *Environmental testing – Part 2: Tests – Test Ca: Damp heat, steady state*

IEC 60068-2-6:1995, *Environmental testing – Part 2: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-11:1981, *Environmental testing – Part 2: Tests – Test Ka: Salt mist*

IEC 60068-2-14:1984, *Environmental testing – Part 2: Tests – Test N: Change of temperature*

IEC 60068-2-27:1987, *Environmental testing – Part 2: Tests – Test Ea and guidance: Shock*

IEC 60068-2-29:1987, *Environmental testing – Part 2: Tests – Test Eb and guidance: Bump*

IEC 60068-2-42:1982, *Environmental testing – Part 2: Tests – Test Kc: Sulphur dioxide test for contacts and connections*

IEC 60068-2-68:1994, *Environmental testing – Part 2: Tests – Test L: Dust and sand*

IEC 60096-1:1986, *Radio frequency cables – Part 1: General requirements and measuring methods*

IEC 60332-1:1993, *Tests on electric cables under fire conditions – Part 1: Test on a single vertical insulated wire or cable*

IEC 60339 (all parts), *General purpose rigid coaxial transmission lines and their associated flange connectors*

IEC 60512-5:1992, *Electromechanical components for electronic equipment, basic testing procedures and measuring methods – Part 5: Impact tests (free components), static load tests (fixed components), endurance tests and overload tests*

IEC 61169-1:1992, *Radio-frequency connectors – Part 1: Generic specification – General requirements and measuring methods*

IEC 61196-1:1995, *Radio-frequency cables – Part 1: Generic specification – General definitions, requirements and test methods*

IEC 61726:1995, *Cable assemblies, cables, connectors and passive microwave components – Screening attenuation measurement by the reverberation chamber method*

IEC QC 001002:1986, *Rules of procedure of the IEC quality assessment system for electronic components (IECQ)*

ISO 9000, *Quality management and quality assurance standards*  
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ISO 9001:1994, *Quality systems – Model for quality assurance in design, development, production, installation and servicing*

ISO 9002:1994, *Quality systems – Model for quality assurance in production, installation and servicing*

### 3 Definitions

For the purpose of this part of IEC 60966, the following definitions apply.

#### 3.1

##### **cable assembly**

a combination of cable(s) and connector(s) with or without any additional protection and with specified performance, used as a single unit

##### 3.1.1

##### **flexible cable assembly**

a cable assembly where the cable is capable of repeated flexure. The cable usually has a braid outer conductor

##### 3.1.2

##### **semi-flexible cable assembly**

a cable assembly not intended for applications requiring repeated flexure of the cable in service, but bending or forming is permissible to facilitate installation

**3.1.3****semi-rigid cable assembly**

a cable assembly not intended to be bent or flexed after manufacture. Any bending or flexing during installation or use may degrade the performance of the cable assembly

**3.2****insertion loss**

the loss introduced by inserting a cable assembly into a system. In this standard, it is the ratio, expressed in decibels, of the power ( $P_1$ ) delivered to a load connected directly to a source and the power ( $P_2$ ) delivered to a load when the cable assembly is inserted between the source and the load

$$\text{Insertion loss} = 10 \times \log \left( \frac{P_1}{P_2} \right)$$

**3.3****reflection factor**

the ratio of the complex wave amplitude of the reflected wave to the complex wave amplitude of the incident wave at a port or transverse cross-section of a transmission line

**3.4****electrical length**

the equivalent free-space length of the cable assembly

**3.5****electrical length difference**

the difference in electrical length between cable assemblies

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**3.6****phase difference**

the difference in phase between a transverse electromagnetic mode (TEM) wave which has traversed the cable assembly and an identical wave which has traversed another cable assembly

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**3.7****propagation time**

the time taken for the propagation of a TEM wave between the reference planes of the two connectors

**3.8****minimum static bending radius**

the radius used in climatic tests. It is the minimum permissible radius for fixed installation of the cable

**3.9****dynamic bending radius**

the bending radius is used for the insertion loss stability, stability of electrical length and flexing endurance tests, and is the minimum bending radius for applications where the cable assembly is flexed. Larger bending radii will allow the increase of the maximum number of flexures